

ABSTRACT

A spatial light modulator for use in a photolithography system includes light modulation elements configured to photolithographically transfer an image onto a substrate using an optical oversampling technique to reduce defects in the transferred image. A first set of the light modulation elements is operable to photolithographically transfer a portion of the image onto an area of a substrate, and a second set of the light modulation elements is operable to photolithographically transfer the portion of the image onto the area of the substrate. The spatial light modulator further includes memory elements in communication with respective light modulation elements for storing data representing the portion of the image.